

REMARKS

The Examiner is thanked for the thorough examination of the present application and the indication that claims 2, 3, 10, and 11 contain allowable subject matter. The Office Action, however, rejected claims 1, 5, 8, 9, 13, and 16 are rejected under 35 U.S.C 103(a) as allegedly unpatentable over Silverbrook (US 6,679,582 B2) in view of Beck et al. (US 6,431,678 B2). Applicant respectfully disagrees.

According to the embodiments of claims 1, 5, and 13, a plurality of electrodes and a controller are defined. The plurality of electrodes are disposed in one of channels of the inkjet cartridge, and contact a reagent in the corresponding channel. The controller is coupled to the electrodes to detect leakage between channels.

Specifically, claim 1, for example, defines:

1. A leakage detection apparatus for a multi-channel inkjet cartridge comprising:
 a plurality of electrodes, disposed in one of channels of the inkjet cartridge respectively, contacting a reagent in the corresponding channel; and
 a controller, coupled to the electrodes, to *detect leakage between channels*.

In contrast, Silverbrook discloses a flooded nozzle detection comprising a nozzles array 14, a plurality of nozzle assemblies 10, and a plurality of containment formations 146. The nozzle assemblies 10 comprise a silicon substrate 16 and a plurality of nozzles 22. An ink inlet channel 48 is defined through the substrate 16 facing each nozzle 22. As shown in Fig. 5a, each containment formation 146 surrounds each nozzle assembly 10, and comprises a containment wall 144 surrounding each nozzle 22. Each containment formation 146 detects the presence of leaked ink of each nozzle 22. If the ink is not properly ejected because of nozzle damage, the leakage is confined by the containment wall 144 so as not to affect the

function of surrounding nozzles. The detection electrodes are positioned in the containment formation 146 so that build up of leaked or misdirected ink completes the circuit. Silverbrook discloses that the containment formation 146 can detect the leakage ink of each nozzle 22 and the containment wall 144 can separate two surrounding nozzles.

Beck et al. discloses an apparatus and method for detecting ink leakage in a print head comprising detectors 30, a detect line 16, a detection circuit 26, and a substrate 20. The detectors 30 are coupled to the detect line 16 and the detection circuit 26. When ink electrically interconnects the power or control line to the detector 30, a voltage is provided to the detection circuit 26 which in turn generates an ink leakage signal to detect the ink leakage on the substrate 20. In short, Beck et al. merely discloses a conventional apparatus and method, which are disclosed in the present application as related art, for detecting the ink leakage on the substrate.

Summarily, Silverbrook discloses that “containment formation 146 is used to detect the ink leakage that may happen near each nozzles 20” and “containment wall 144 is used to separate ink leakage from different nozzles”. Applicant notes that Silverbrook does not teach that the ink leakage would happen between different nozzles because of the function of containment wall 144. Furthermore, the containment formation 146 only can detect the ink leakage of each nozzle 20. Additionally, Beck et al. disclose detectors 30 which are used to detect the ink leakage on the substrate 20, and NOT between channels. Therefore, even if combined, the combination of Silverbrook and Beck failed to disclose all features of the claimed embodiments. For at least this reason, the rejections should be withdrawn.

In addition and as a separate basis for traversing the rejections, Applicant submits that there is no proper motivation to combine Silverbrook and Beck et al. For example, unanswered questions include: how are detectors 30 supposed to be used in Silverbrook’s each nozzle?

Exactly how is Silverbrook's design supposed to be combined with Beck et al.'s design?

Applicant respectfully submits that the Office Action has failed to cite a proper motivation or suggestion for combining the cited references. In this regard, the Office Action stated only that the combination would have been obvious "to detect undesired leakage." (Office Action, p. 2). Under this rationale, any feature of Beck couple be combined with virtually any other reference in the relevant field. This alleged motivation is clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

"The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(*Emphasis added.*) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements

to derive a leakage detection apparatus, as claimed by the Applicants.

When an obviousness determination is based on multiple prior art references, there must be a showing of some “teaching, suggestion, or reason” to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the “absence of such a suggestion to combine is dispositive in an obviousness determination”).

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be “clear and particular.” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 (“The absence of such a suggestion to combine is dispositive in an obviousness determination.”).

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000).

In combining Beck with Silverbrook, the Office Action said that the combination would

be obvious "to detect undesired leakage." However, merely identifying some benefit (from hindsight) that results from a combination is not sufficient to justify the combination, and the motivation or suggestion must come from the prior art itself, and the Office Action has failed to identify such a motivation. For at least the additional reason that the Office Action failed to identify proper motivations or suggestions for combining the various references to properly support the rejections under 35 U.S.C. § 103, those rejections should be withdrawn.

Claims 4, 12, and 17 were rejected under 35 U.S.C 103(a) as allegedly unpatentable over Silverbrook in view of Beck as applied to claim 1 above, and further in view of Monclus et al. (US 6,402,277 B1). Also, claims 6-7 and 14-15 were rejected under 35 U.S.C 103(a) as allegedly unpatentable over Silverbrook in view of Beck as applied to claim 5 above, and further in view of Kanayama et al.(US 5,572,241).

As independent claims 1, 5, and 13 patently define over the cited art, Applicant respectfully submits that dependent claims 4, 6-7, 12, 14-15, and 17 also define over the cited art for at least the same reasons.

For at least the foregoing reasons, Applicant respectfully submits that the rejections be withdrawn and requests that a timely Notice of Allowance be issued in this case.


CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this Response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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